Electron Work Function of Na-K, Na-Rb and K-Cs Binary Alloys

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The surface electronic properties of alloys are not well understood. A recent review on the measurements of the alkali alloys work functions has been presented by Alchagirov, et al. [1]. The work function of the binary alkali alloys such as sodium-potassium, sodium-rubidium, and potassium-cesium has been studied in a vacuum condition of 10^{-7} Pa and temperature range 300-400 K under conditions of thermodynamic equilibrium with its saturated vapor. The work functions (WF) of the alloys were determined by Fowler`s isothermic curves method (the accuracy was within ± 1.5%). To study photoemission, a special device and technique were developed [2]. The dependence of the Na-Rb work function on composition shows work function values remain practically unchanged when the composition is equal to the eutectic value.

It was revealed for the K-Cs system that small additions to 10 at. p.c. of Cs in K lead to decreasing WF of alloys to WF value, that of the WF of clean Cs. The last result does not agree with experimental data on the similar decreasing WF at 20 at. p.c. of Cs addition, reported earlier [3].

[1] B.B. Alchagirov, V.B. Lazarev, and Kh.B. Khokonov. Electron Work Function of Alkaline Metals and Related Alloys (Reviews on thermophysical properties of substances) Moscow: *IVTAN* **5** 76 (1989).
[2] A.B. Alchagirov, *Instruments and Experimental Techniques* **40**. 274 (1997).
[3] I. Malov, V.B. Lazarev, and M.D. Shebzukhov, *Surface Science* **44**. 21 (1974).